**Description**: This lesson prepares students to read the first chapter of The Number Devil by Hans [Magnus Enzensberger](http://www.barnesandnoble.com/s/Hans-Magnus-Enzensberger) through exploration of the concept of infinity. The lesson begins by using two Graphic Organizers to compare rational and irrational numbers, and to decide whether the elements of a set are “countable.” Students will then be introduced to a video (“The Joy of Infinity,” a 30 minute video lecture in “The Joy of Mathematics” course by Great Courses) by asking them to listen with the purpose of gathering information in order to answer some specific questions. During the lecture, students will take notes on a graphic organizer. Finally, students will prepare written answers to the questions posed before the video.

**Essential Questions**:

* What is infinity?

**Standards**:

* (NYS) Math 7.N.1, 7.N.2
* (CCSS) RST 1, 2, 4, 5, 7

**Title: The Joy of Infinity**

**Name**: **Reba Hekker** **Subject Area: Integrated Algebra**

**Date**: **7/2/11**  **Grade Level: 8th grade**

**Time Required: 42 minutes**

**Reading Skills**:

* Activating background knowledge
* Question the text
* Draw inferences
* Determining importance
* Synthesizing

**Thinking Skills**:

* Abstracting
* Comparing
* Explaining
* Analyzing

**Writing/Speaking Skills**:

* Taking notes
* Formulating answers to questions

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| Objectives:  *At the end of the lesson, students will be able to…* | Assessments:*I will know they can do this because they will…* |
| 1. Know that infinity is a concept, not a number | 1. Answer questions after a video |
| 2. Tell whether a set of numbers is countable | 2. Answer questions after a video |
| 3. Know there are different levels of infinity | 3. Answer questions after a video |

## Pre-Reading

**Procedure before Reading**:

1. Use graphic organizers review rational and irrational numbers and introduce the concept of “countability”.
2. Show students the questions they will be expected to answer after the video, and how the video graphic organizer will help them gather information.

**During Reading**

**Procedure while Reading**:

1. Students will take notes during the video using the graphic organizer.

## Post-Reading

**Procedure after Reading:**

1. Students will answer questions from their notes.

**Learning Styles: Visual Auditory**

**Materials**:

* Graphic Organizer – Rational/Irrational
* Graphic Organizer – Countability
* Graphic Organizer – video
* Questions

\*Please attach all student handouts

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Questions: “The Joy of Infinity”

Please answer all questions using complete sentences.

1. Is infinity a number? Explain.
2. What does it mean for a set to have a size of infinity?
3. Can we count (list) all positive, rational numbers?
4. Can we count (list) all real numbers?
5. What does this suggest about whether we can count irrational numbers?
6. What is meant by “different levels of infinity?”

**HOW TO TEST**

**DEFINITION**

**COUNTABILITY**

**EXAMPLES**

**NON-EXAMPLES**

**“The Joy of Infinity”**

|  |
| --- |
| **Infinity as a number** |
| **Infinity as a size** |
| **Countability of positive rational numbers** |
| **Countability of positive reals** |
| **Levels of Infinity** |

How I’ll remember

**What makes us different**

Irrational Numbers

Rational Numbers

What we have in common

Irrational Numbers

Rational Numbers